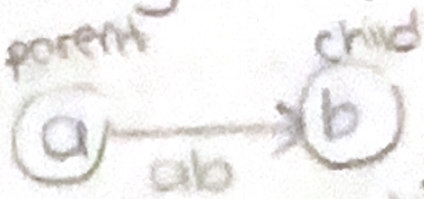
Graph Representation

Given a graph $G=(V,E)$ → express complexity using V & E

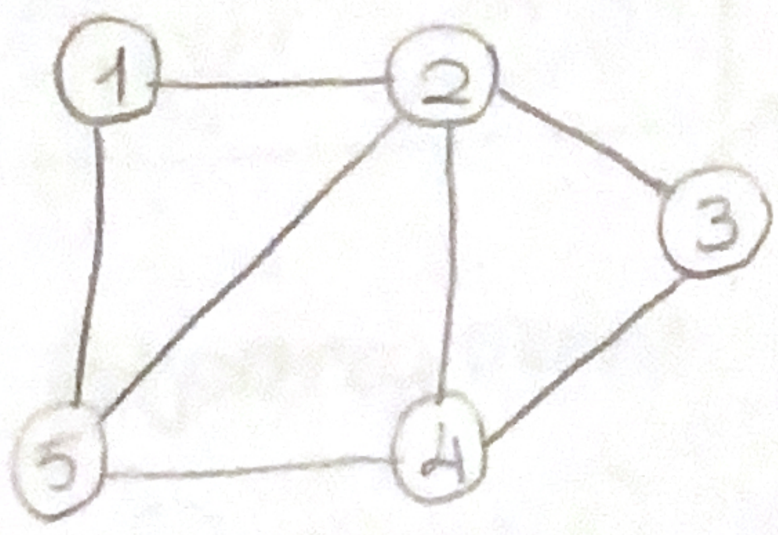
- V → vertices
- E → edges

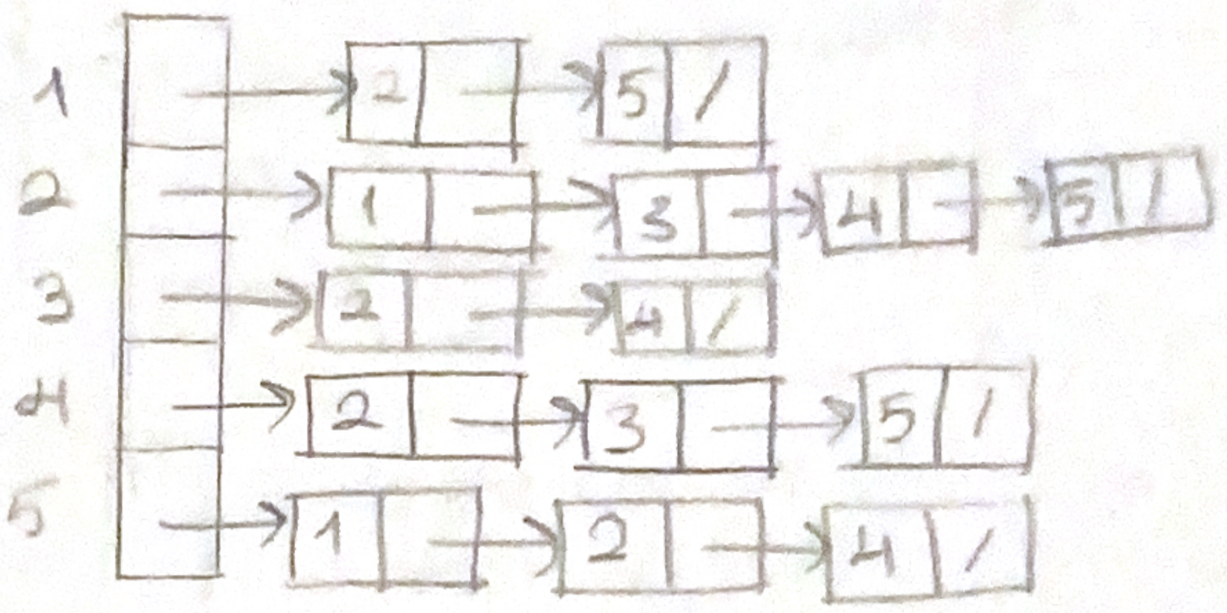


↳ directed graph

Adjacency List

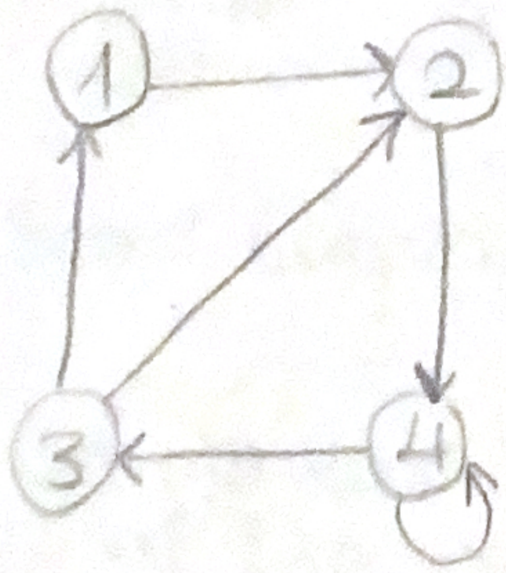
For an undirected graph:

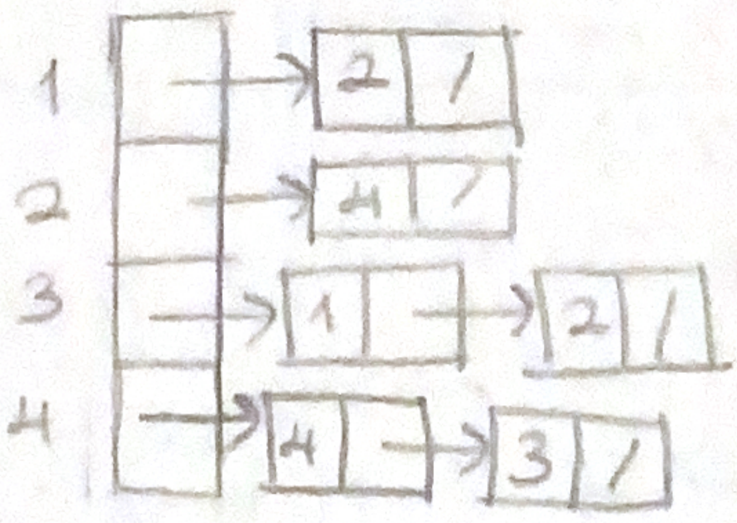




↳ static data types (not ADT)

For a directed graph:





Space Requirement

$|V|$ → size of V

$|E|$ → size of E

array part $O(|V|)$

linked list part $(O|E|)$ } space comp.

Total complexity → $O(|V|+|E|)$

Time Complexity

Assume you've taken linked list rep of adjacency list.
How do you draw graph from scratch?

1) First go through array part & draw vertices $(O|V|)$
2) Draw edges, go over linked list $(O|E|)$

Total complexity: $O(|V|+|E|)$ (Directed graph)
(for drawing the graph)